

Oil and Gas Development in the Arctic Ocean – Understanding the Legal and Regulatory Framework

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I. INTRODUCTION

Oil and gas companies have been focusing their efforts and devoting substantial resources to the Arctic Ocean with the goal of extracting potentially large oil and gas resources. While the Arctic Region may provide significant sources of energy for the United States, industry and Federal regulatory agencies must consider the impact of increased development on the Arctic environment which is currently experiencing deterioration of sea ice due to changing climactic conditions.

This paper describes the current legal and regulatory requirements pertaining to oil and gas development in the Arctic Ocean, including the Outer Continental Shelf Lands Act (OCSLA), the Marine Mammal Protection Act (MMPA), the Endangered Species Act (ESA), the National Environmental Policy Act (NEPA), and the Administrative Procedure Act (APA). In addition, the paper highlights key issues that have been arising in this area, including biological effects on marine mammals from seismic surveys and drilling operations and Alaska Native subsistence users and their concern over oil and gas impacts.

II. BACKGROUND

Drilling a well is one way to determine whether there is oil below ground. In addition, innovations in technology have led to new ways of locating subsurface hydrocarbons, including geophysical and geological surveys (G&G surveys).

With respect to geophysical surveys, the predominant type involved with oil and natural gas exploration on the Outer Continental Shelf (OCS) is seismic reflection, which measures the travel time of seismic waves from the ocean surface to rock formations in the earth. The seismic reflection survey collects information concerning the breadth and depth of formations of rock and also locates stratigraphic traps, faults, folds, salt domes, and reefs. Geophysical surveys can also measure the electric, magnetic, and gravitational fields of the earth. Hazardous conditions can be identified by analyzing shallow layers. These hazardous conditions may include shallow gas accumulations, shallow water flows, potential slope failure areas, and surface faulting. The potential for hydrocarbon resources can be identified by analyzing deeper layers.

With respect to geological surveys, methods used on the Outer Continental Shelf include deep stratigraphic testing, shallow coring, and bottom sampling. The information collected may provide guidance on the geology of an area and the types of rocks which exist, which may indicate whether there is a potential for petroleum accumulation to exist. Geological surveys have also been used to analyze the resource potential of gas hydrates.

III. APPLICABLE LAW

A. Outer Continental Shelf Lands Act

Oil companies and specialized data collection firms that seek to conduct G&G surveys must apply to the U.S. Department of the Interior, Minerals Management Service (MMS) for permits pursuant to the OCSLA. The OCSLA, defines the Outer Continental Shelf as “all submerged lands lying seaward and outside of the area of lands beneath navigable waters. . . .”¹ There are four major stages in offshore oil development on the OCS: “(1) formulation of a five year leasing plan by the MMS; (2) lease sales; (3) exploration by the lessees; (4) development and production.”² Usually, an oil and gas lease on the OCS covers one area

¹43 U.S.C. § 1331(a). “Navigable waters” are defined as “(1) all lands within the boundaries of each of the respective States which are covered by nontidal waters that were navigable under the laws of the United States at the time such State became a member of the Union, or acquired sovereignty over such lands and waters thereafter, up to the ordinary high water mark as heretofore or hereafter modified by accretion, erosion, and reliction; (2) all lands permanently or periodically covered by tidal waters up to but not above the line of mean high tide and seaward to a line three geographical miles distant from the coast line of each such State and to the boundary line of each such State where in any case such boundary as it existed at the time such State became a member of the Union, or as heretofore approved by Congress, extends seaward (or into the Gulf of Mexico) beyond three geographical miles, and (3) all filled in, made, or reclaimed lands which formerly were lands beneath navigable waters, as hereinabove defined.” See *id.* §§ 1301(a).

²*Sec’y of the Interior v. California*, 464 U.S. 312, 337 (1984).

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that is three miles square and contains 5,760 acres.³ OCS leases are allocated through auctions and the successful bidder must provide to the United States the rental fee for the first year and a cash bonus.⁴

OCS lease terms are fixed between five and ten years, known as the “primary term,” and “as long [thereafter] as oil or gas is produced from the [lease] in paying quantities, or drilling or well reworking operations as approved by the Secretary [of Interior] are conducted.”⁵ The lease stipulations may include restrictions on activity to protect wildlife.

The successful bidder on an OCS lease will submit an exploration plan (EP) for MMS approval.⁶ State concurrence is required for MMS permits that implicate a coastal zone management program.⁷ If oil or gas is discovered, an OCS lessee will submit a development and production plan (DPP), which would describe the facilities such as the production platforms and would also describe the operations to be used for production and development.⁸ MMS will forward the DPP to governors of affected states and, upon request, to local governments.⁹ A governor of an affected state may submit comments and recommendations. MMS will accept a governor’s recommendations if it finds that the recommendations reasonably balanced national and state interests.¹⁰ At the end of the primary term, an OCS lease will end unless gas or oil is produced, or well reworking or drilling operations are conducted, or unless a lease is suspended after a request is made by the lessee.¹¹ If an OCS lessee’s actions have the potential to result in harassment of marine mammals, the lessee would also have to apply for an incidental take authorization pursuant to certain requirements under the MMPA, which are described below.

B. Marine Mammal Protection Act

The MMPA¹² was enacted in 1972 to, among other things, protect certain species and population stocks of marine mammals that faced extinction or depletion as a result of human activities.¹³ The MMPA is administered by the U.S. Department of Commerce, National Oceanic Atmospheric Administration, National Marine Fisheries Service (NMFS), and the U.S. Department of the Interior, Fish and Wildlife Service (FWS). This paper focuses on NMFS’ responsibilities under the MMPA, which include most marine mammals, including sea lions, seals, porpoises, dolphins, and whales.¹⁴ The MMPA establishes a moratorium on the taking of marine mammals and the importation of marine mammals or marine mammal products.¹⁵ There are limited exceptions to the general moratorium on the taking of marine mammals, including the taking of marine mammals for photography, public display, or scientific research purposes,¹⁶ the incidental taking of marine mammals during commercial fishing operations,¹⁷ and the incidental taking of small numbers of marine mammals pursuant to a specified activity in a specified geographic region.¹⁸

Under the authority of the MMPA, NMFS may authorize the take of marine mammals incidental to specified activities, such as oil and gas exploration. “Take” is defined to mean to “harass, hunt, capture, or kill, or attempt to harass, hunt, capture, or kill any marine mammal.”¹⁹ “Harassment” is defined to mean:

any act of pursuit, torment, or annoyance which – (i) has the potential to injure a marine mammal or marine mammal stock in the wild; or (ii) has the potential to disturb a marine mammal or marine mammal stock in the wild by causing disruption of behavioral patterns, including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering.²⁰

³See 43 U.S.C. § 1337(b); 30 C.F.R. § 256.28.

⁴See 43 U.S.C. §§ 1337(a)(1), (b); 30 C.F.R. §§ 256.29 - 256.50.

⁵43 U.S.C. § 1337(b)(2); 30 C.F.R. § 256.37.

⁶43 U.S.C. § 1340(c)(1).

⁷*Id.*

⁸See 43 U.S.C. §§ 1351(a),(c); 30 C.F.R. § 250.204.

⁹43 U.S.C. § 1351(a)(3).

¹⁰43 U.S.C. § 1345(c). MMS may accept the recommendations of a local government executive if it finds that the recommendations reasonably balance national and state interests. *Id.*

¹¹See 30 C.F.R. § 250.105 (2002) (a “suspension of production” is a “deferral of the requirement to produce”); 30 C.F.R. § 250.110 .

¹²16 U.S.C. § 1361 et seq.

¹³See *id.* § 1361(1).

¹⁴FWS manages dugongs, manatees, sea otters, walrus, and polar bears.

¹⁵16 U.S.C. §§ 1371(a), 1362(8), 1373.

¹⁶See *id.* § 1371(a)(1).

¹⁷See *id.* § 1371(a)(2).

¹⁸See *id.* § 1371(a)(5).

¹⁹16 U.S.C. § 1362 (13).

²⁰See *id.* § 1362(18)(A). In the context of a “military readiness activity” or a “scientific research activity” conducted by or on behalf of the Federal Government, the term harassment is defined to mean “(i) any act that injures or has the significant potential to injure a marine mammal or marine mammal stock in the wild; or (ii) any act that disturbs or is likely to disturb a marine mammal or marine mammal stock in the wild by causing disruption of natural behavioral patterns, including, but not limited to, migration, surfacing, nursing, breeding, feeding, or sheltering, to a point where such behavioral patterns are abandoned or significantly altered.” See *id.* § 1362(18)(B).

The term “Level A harassment” is used to describe the potential to *injure* a marine mammal or marine mammal stock in the wild,²¹ and the term “Level B harassment” is used to describe an act which has the potential to *disturb* a marine mammal or marine mammal stock by disrupting behavioral patterns.²² Two types of authorizations may be issued by the Federal Government: (1) 5-year regulations and letters of authorization which authorize all forms of take, including the potential for serious injury or death; and (2) 1-year incidental harassment authorizations (IHA) which typically involve only behavioral harassment of marine mammals.²³ IHAs may not be issued if an activity has the potential to result in serious injury or mortality.²⁴

In order for NMFS to authorize the incidental take of marine mammals, the agency must, after providing the public with an opportunity to comment on an MMPA application, make certain findings. First, the specified activity must not result in the take of more than small numbers of an affected marine mammal species or stock. Next, the total of such taking over the course of the 5-year regulations or the 1-year IHA must have a negligible impact on the affected marine mammal species or stock. Finally, the taking must not have an unmitigable adverse impact on the availability of such species or stock for subsistence uses.²⁵ Depending on whether regulations are issued or an IHA is granted, NMFS must prescribe permissible methods of taking, means of effecting the least practicable adverse impact on marine mammal species or stocks (i.e., mitigation measures), and monitoring and reporting requirements.²⁶ In addition, when issuing an MMPA incidental take authorization, NMFS addresses legal and regulatory mandates such as the ESA, NEPA, and APA, which are described in the following sections of this paper.

In the case of Arctic oil and gas exploration, NMFS’ practice has been to issue 1-year IHAs to cover seismic and drilling operations for the summer and fall seasons. NMFS often requires detailed mitigation and monitoring measures. IHA holders may be required to designate a qualified, NMFS approved biological observer to record the effects of seismic and drilling activities on marine mammals.²⁷ IHA holders must document the effects (including acoustic) on marine mammals and document or estimate the actual level of take.²⁸ If the proposed activity may affect the availability of marine mammals for subsistence uses, the proposed monitoring plans must be independently peer-reviewed prior to issuing the IHA.²⁹ Subsequent to the completion of the activity, an IHA holder must submit a report describing the “[r]esults of monitoring activities, including an estimate of the actual level and type of take, species name and numbers of each species observed, direction of movement of species, and any observed changes or modifications in behavior.”³⁰

IHAs may be modified, suspended or withdrawn depending on whether the conditions are being substantially complied with or whether the authorized taking is having or may have more than a negligible impact on the affected species or stock or an unmitigable adverse impact on the availability of such species or stocks for subsistence uses.³¹

C. Endangered Species Act

The ESA was enacted in 1973 to conserve threatened and endangered species and their ecosystems. The FWS is responsible for terrestrial species and NMFS is responsible for marine and anadromous species. Pursuant to the ESA, a species may be listed as either “threatened” or “endangered.”³² A species is threatened if it is “likely to become an endangered species within the foreseeable future. . . .”³³ A species is endangered if it is “in danger of extinction throughout all or a significant portion of its range”³⁴ The United States Supreme Court stated that the ESA “reflect[s] a conscious decision by Congress to give endangered species priority over the ‘primary missions’ of federal agencies . . . the Act is substantive in effect, designed to *prevent* the loss of any endangered species, regardless of the cost.”³⁵

The ESA requires federal agencies, typically referred to as “action agencies,” to consult with NMFS or FWS to ensure that any action they authorize, fund or carry out is not likely to jeopardize the continued existence of any listed species or result in the destruction or adverse modification of designated critical habitat.³⁶ This paper will focus on NMFS’ responsibilities under the ESA. Consultation regulations were promulgated at 50 C.F.R. Part 402 and allow for formal and informal consultation.³⁷ During

²¹See *id.* § 1362(18)(C) (emphasis added).

²²16 U.S.C. § 1362(18)(D) (emphasis added).

²³See *id.* §§ 1371(a)(5)(A), (D).

²⁴See *id.* §§ 1371(a)(5)(A), (D); 50 C.F.R. §§ 216.105, 216.107.

²⁵See 16 U.S.C. §§ 1371(a)(5)(A)(i), 1371(a)(5)(D)(i).

²⁶See *id.* §§ 1371(a)(5)(A)(i) & (D)(ii); 50 C.F.R. §§ 216.105 – 216.108.

²⁷50 C.F.R. § 216.108(b). NMFS may also place an observer aboard vessels, platforms, and aircraft to monitor the activity’s impact on marine mammals. See *id.* § 216.108(e).

²⁸50 C.F.R. § 216.108(c).

²⁹See *id.* § 216.108(d).

³⁰See *id.* § 216.108(f).

³¹See *id.* § 216.107(f).

³²16 U.S.C. § 1533.

³³See *id.* § 1532(20).

³⁴See *id.* § 1532(6).

³⁵*TVA v. Hill*, 437 U.S. 153, 155, 188 n. 34 (1983) (emphasis in original).

³⁶16 U.S.C. § 1536(a)(2).

³⁷“Formal consultation” is defined as “a process between the Service and the Federal agency that commences with the Federal agency’s written request for consultation under section 7(a)(2) of the Act and concludes with the Service’s issuance of the biological opinion under section 7(b)(3) of the Act.” 50 C.F.R. §

informal consultation, NMFS may concur in the action agency's determination that the action may affect but is not likely to adversely affect a listed species or result in the destruction or adverse modification of critical habitat in which case, the consultation process concludes. If NMFS does not concur, the action agency would initiate formal consultation, generally with a biological assessment. NMFS would then issue a biological opinion setting forth its determination of whether the proposed action would jeopardize the continued existence of the listed species or result in the destruction or adverse modification of critical habitat. If NMFS determines that the action is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of any critical habitat, NMFS will provide a statement regarding incidental take of the listed species.³⁸ The Incidental Take Statement must set forth reasonable and prudent measures to minimize such impact and in the case of listed marine mammals must also specify those measures that must be followed to comply with the incidental taking of marine mammals pursuant to an MMPA incidental take authorization.³⁹ Finally, the action agency must set forth criteria to determine when formal consultation under the ESA must be re-initiated.⁴⁰ If an MMS action is challenged for inconsistency with the ESA, a court will consider whether it would be possible for MMS to order environmentally protective measures at one of the later stages of the oil and gas development process; action at the earliest stage may not always be required.⁴¹

D. National Environmental Policy Act

In addition to ESA and MMPA considerations, NMFS and MMS must also address other broader statutory requirements, such as NEPA. NEPA is a procedural statute that requires federal government agencies to consider the impact on the environment of major decisions prior to making such decisions and after considering possible alternatives.⁴² The Council on Environmental Quality promulgated regulations to implement NEPA at 40 C.F.R. Part 1502. Under NEPA, federal agencies are required to take a "hard look" at a proposed action's environmental consequences prior to making the final decision.⁴³ NEPA does not require federal agencies to "elevate environmental concerns over other appropriate considerations;"⁴⁴ it simply establishes procedures which an agency must follow to evaluate whether a proposed agency action results in significant impacts to the quality of the human environment.⁴⁵ "Impacts" includes direct, indirect and cumulative impacts.⁴⁶ In the context of oil and gas drilling and seismic surveys in the Arctic, federal permitting agencies such as MMS and NMFS need to follow NEPA procedures when issuing permits.

Under NEPA and its regulations, a federal agency may prepare an environmental assessment (EA) to "[b]riefly provide sufficient evidence and analysis for determining whether to prepare an environmental impact statement or a finding of no significant impact."⁴⁷ An EA is a "concise public document" that "[s]hall include brief discussions of the need for the proposal, of alternatives . . . , of the environmental impacts of the proposed action and alternatives, and a listing of agencies and persons consulted."⁴⁸ If the permitting agency finds that there will be no significant impact on the environment, the agency will issue a Finding of No Significant Impact and no environmental impact statement (EIS) will be required.⁴⁹ For IHAs, NMFS usually prepares an EA to determine whether the issuance of the IHA would result in significant impacts to the quality of the human environment.

If the permitting agency's action will be a "major Federal action[] significantly affecting the quality of the human environment," the agency must prepare an EIS, which must address environmental impacts of the proposed action and alternatives to the proposed action.⁵⁰ A court will review an EIS to ensure that it contains a "reasonably thorough discussion of the significant

402.02. Formal consultation regulations are found at 50 C.F.R. § 402.14. Informal consultation is "an optional process that includes all discussions, correspondence, etc., between the Service and the Federal agency or the designated non-Federal representative, designed to assist the Federal agency in determining whether formal consultation or a conference is required. If during informal consultation it is determined by the Federal agency, with the written concurrence of the Service, that the action is not likely to adversely affect listed species or critical habitat, the consultation process is terminated, and no further action is necessary." See *id.* § 402.13(a). "During informal consultation, the Service may suggest modifications to the action that the Federal agency and any applicant could implement to avoid the likelihood of adverse effects to listed species or critical habitat." See *id.* § 402.13(b).

³⁸See *id.* § 402.14(i).

³⁹50 C.F.R. § 402.14(i).

⁴⁰See *id.* § 402.16.

⁴¹*Vill. of False Pass v. Clark*, 565 F. Supp. 1123, 1153-63 (D. Ak. 1983).

⁴²See 42 U.S.C. § 4321, 4331; 40 C.F.R. § 1501.1.

⁴³See *Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 350-51 (1989); *Vermont Yankee Nuclear Power Corp. v. Natural Res. Def. Council*, 435 U.S. 519, 558 (1978).

⁴⁴*Native Vill. of Point Hope v. Minerals Mgmt. Serv.*, 2008 WL 2651403 (D. Ak. 2008), citing *Baltimore Gas & Elec. Co. v. Natural Res. Def. Council, Inc.*, 462 U.S. 87, 97 (1983)(internal citations omitted).

⁴⁵*Robertson*, 490 U.S. at 350; *Okanogan Highlands Alliance v. Williams*, 236 F.3d 468, 473 (9th Cir. 2000).

⁴⁶See 40 C.F.R. § 1508.8. Impacts and effects are synonymous for purposes of NEPA regulations.

⁴⁷See *id.* § 1508.9(a)(1).

⁴⁸See *id.* § 1508.9(b).

⁴⁹See *id.* §§ 1508.13, 1502.1, 1502.3.

⁵⁰NEPA requires that an EIS address: (i) the environmental impact of the proposed action; (ii) any adverse environmental effects which cannot be avoided should the proposal be implemented; (iii) alternatives to the proposed action; (iv) the relationship between local short-term uses of man's environment and the

aspects of probable environmental consequences.”⁵¹ One approach to the EIS is the tiering approach which involves a large, programmatic analysis followed by site-specific analysis.⁵² OCSLA authorized activities are staged and are therefore well-suited to the tiering approach.⁵³

E. Administrative Procedure Act

Final agency actions, including permitting decisions under the OCSLA and the MMPA and actions taken under the ESA and NEPA must be consistent with an overarching federal statute pertaining to federal government agencies - the APA. This Act establishes uniform standards by which courts may review the final actions of all federal agencies. Under the APA, a court will invalidate final agency actions which are “arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law,” and those that are “without observation of procedure required by law.”⁵⁴ The APA provides that in “making the foregoing determinations, the court shall review the whole record or those parts of it cited by a party, . . .”⁵⁵ Pursuant to the APA, MMS and NMFS must ensure that there is a rational basis for their final actions and must establish a justification for taking final action in the record. Federal agencies devote substantial effort to documenting their decision-making process and reasoning and encourage applicants to assist them by providing well-documented applications for permits. Additionally, when issuing 5 year regulations for incidental take of marine mammals, NMFS must also comply with APA rulemaking procedures which generally require notice of and an opportunity for the public to comment on proposed regulations.⁵⁶

IV. KEY ISSUES

For purposes of authorizing Arctic oil and gas exploration, NMFS considers a number of key issues, including acoustic impacts on cetaceans and pinnipeds and impacts on subsistence uses. For purposes of determining the possibility of injury or behavioral harassment from acoustic sources, NMFS’ practice has been to apply the 180-decibel (dB) re 1 microPa rms (root mean squared) for cetaceans and 190-dB re 1 microPa rms for pinnipeds to approximate where onset of Level A harassment may begin (i.e., potential for injury). For Level B harassment from acoustic sources such as impulse sounds which are used for seismic surveying, NMFS uses 160 dB re 1 microPa rms as the criteria level. At this level, it is believed that marine mammals could experience a significant behavioral response in a biologically important behavior or activity.⁵⁷ The best available scientific data strongly suggests that temporary threshold shift (Level A harassment (injury)) from single-sound exposure events (e.g., seismic airguns) may occur at much higher levels than the levels previously estimated using very limited data, i.e., 180-dB rms for cetaceans from impulse sound and 190 dB rms for pinnipeds from impulse sound). The research also indicates that the use of a simple threshold may not be able to accurately predict marine mammal behavior, which is highly contextual. (Southall et al. (2007).

In order to achieve the “least practicable adverse impact” on marine mammal species or stocks and to ensure no unmitigable adverse impacts on the availability of such species or stocks to be taken for subsistence uses, NMFS has required seismic and drilling permittees to implement a variety of mitigation and monitoring measures as part of their specified activities. Past measures have included, but are not limited to: (1) aerial- and vessel-based monitoring to the 120-dB and 160-dB isopleths to detect 4 or more cow/calf pairs or aggregations of 12 or more bowhead or gray whales, respectively. If animals are sighted within these isopleths permittees are required to power down (or in some cases, shut down) their sound source; (2) the establishment of 180-dB and 190-dB safety zones, whereby permittees are required to either power down or shut down seismic airgun arrays if marine mammals are detected within the safety zone; (3) use of trained, NMFS-approved marine mammal observers to detect the presence of marine mammals around the seismic vessel or drilling platform; (4) “ramp-up” of the seismic airgun array to allow marine mammals the opportunity to vacate the area of ensonification and thus avoid any potential injury or impairment of their hearing capabilities or other injury; and (5) the use of passive acoustic monitoring to detect the presence of marine mammals.

NMFS must also consider how seismic and drilling operations affect Alaska Native subsistence users. Subsistence uses in Alaska are more challenging than in other areas because of Alaska’s unique history. In the past, Europeans and Russians traveled through Alaska, and Alaska was subject to Russian or American legal systems, but due to Alaska’s remoteness, Alaska natives were fairly autonomous. The legal status of natives’ rights to the land was not settled until the latter half of the 20th century.⁵⁸ In

maintenance and enhancement of long-term productivity, and (v) any irreversible and irretrievable commitments of resources which would be involved in the proposed action should it be implemented.” 42 U.S.C. § 4332(2)(C)(i)-(v).

⁵¹*Neighbors of Cuddy Mountain v. U.S. Forest Serv.*, 137 F.3d 1372, 1376 (9th Cir. 1998) (quotations and citations omitted).

⁵²See 40 C.F.R. § 1508.28(b); *Friends of Yosemite Valley v. Norton*, 348 F.3d 789, 800 (9th Cir. 2003).

⁵³*Vill. of False Pass v. Clark*, 733 F.2d 605, 608, 614 (9th Cir. 1984).

⁵⁴U.S.C. §§ 706(2)(A), (D).

⁵⁵See *id.* § 706(2).

⁵⁶See *id.* § 553.

⁵⁷See 67 Fed. Reg. 46,712, 46,740 (Jul. 16, 2002).

⁵⁸*Paul v. U.S.*, 20 Cl. Ct. 236, 239 (Cl. Ct. 1990).

some urban locations, Alaska natives abandoned traditional ways, but in many areas, Alaska natives continued to practice subsistence hunting and fishing as they had for thousands of years.⁵⁹ These subsistence uses came into conflict with oil exploration activities which began in the 1960s in the Arctic Slope Region.⁶⁰ To the present day, native communities continue to argue that “their continued social, cultural, and economic well-being depends on their continued ability to hunt and to fish in their traditional territories”⁶¹

One paramount issue of concern to subsistence users is the potential deflection of bowhead whales from their migratory routes through the Chukchi and Beaufort Seas when exposed to certain received sound levels from seismic and drilling operations. The hunt for the Bowhead is central to some native cultures.⁶² Native Alaskan communities have argued that the deflection has a substantial impact on their ability to harvest whales for subsistence purposes because it requires the whaling captains to travel farther out to sea. This leads to safety issues and the possibility that the whales will spoil by the time they reach the shore for butchering. In order to assist in mitigation of any adverse effects to subsistence uses, oil and gas companies are required to submit “Plans of Cooperation” to NMFS as part of their application and often enter into conflict avoidance agreements (“CAA”) with Alaska Native communities. These agreements are bilateral and typically provide Alaska Native communities with certain assurances as to how and when oil and gas exploration will occur and measures the companies will take to avoid conflicts with subsistence users.⁶³

Another issue of interest is cumulative impacts in NEPA analyses.⁶⁴ It is clear that climate change caused by greenhouse gas emissions negatively impacts the habitat of polar bears such as to trigger actions under the ESA.⁶⁵ What is not clear is the manner in which climate change should be factored into the scope of any EIS drafted by NMFS and/or MMS for actions related to oil and gas drilling and seismic surveys. Climate change complicates the analysis of the potential effects of a proposed action on the environment.

V. CONCLUSION

The various legal and regulatory regimes that govern oil and gas drilling and seismic surveys in the Arctic are designed to address growing concerns over the potential environmental impacts associated with these activities. The substantive and procedural mandates provide a framework for public involvement in an emerging environmental field and will help ensure that the federal agencies responsible for protecting wildlife and ensuring development of the OCS are well-informed of consequences of authorizing oil and gas development in the Arctic Ocean. The challenge associated with facilitating oil and gas drilling and seismic surveying in the Arctic is compliance with all of the applicable legal and regulatory regimes, especially in the context of scientific uncertainty concerning the impact of such activity on animals, and in the context of global climate change which is rapidly deteriorating the Arctic environment.

⁵⁹*Id.* at 240.

⁶⁰*Id.* at 242. See also *People of the Vill. of Gambell v. Hodel*, 869 F.2d 1273 (9th Cir. 1989) (plaintiffs sued to enjoin OCS leases due to their aboriginal rights); *Inupiat Cmty. of Arctic Slope v. U.S.*, 548 F. Supp. 182, 185 (D. Ak. 1982) (plaintiffs claimed exclusive use and occupancy of the sea ice “since time before human memory” as well as to the water column, the seabed, and the minerals below).

⁶¹*Native Vill. of Eyak v. Trawler Diane Marie, Inc.*, 154 F.3d 1090, 1091 (9th Cir. 1998) (“The Native Villages are located in the Price William Sounds, the Gulf of Alaska, and the lower Cook Inlet regions of Alaska. They claim that, for more than 7,000 years, their members have hunted sea mammals and harvested the fishery resources of the OCS. The Native Villages maintain that a majority of their members still maintain a subsistence lifestyle heavily reliant on the fish and wildlife of the OCS, and that their continued social, cultural, and economic well-being depends on their continued ability to hunt and to fish in their traditional territories on the OCS. The Native Villages argue that they are entitled to exclusive use and occupancy of their respective areas of the OCS, including exclusive hunting and fishing rights, based upon unextinguished aboriginal title.”)

⁶²*North Slope Borough v. Andrus*, 642 F.2d 589, 593 (D.C. Cir. 1980).

⁶³The provisions contained in a CAA are usually contained in an IHA and becoming binding terms and conditions on the permit holder. See 50 C.F.R. § 216.104(a)(12).

⁶⁴See 40 C.F.R. § 1508.25(c)(3). The cumulative impact is defined as “the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions . . . Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.” See *id.* § 1508.7.

⁶⁵See 73 Fed. Reg. 28,212 (May 15, 2008) (determination of threatened status for polar bear).